

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a method for detecting and quantifying an analyte in a solution using Surface Enhanced Raman Scattering of light using an active metal sensor placed into a sample being analyzed, the improvement comprising using the active metal sensor periodically, with a period, T_{ed} , which period is formed by modulating the electrodeposition current density in a galvanodynamic regime of the electrodeposition at the equilibrium potential of the active metal in an active metal solution[.] , wherein the electromodulation current value ΔI is selected so that alteration of the surface potential Δv is less than the value of RT/F , wherein R is the gas constant, T is absolute temperature, and F is the Faraday constant.

2. (Currently Amended) The method according to claim 1 wherein the surface of the active metal sensor is illuminated with monochromatic light at frequency v_e and the SERS spectrum obtained for the analyte is registered in a synchronous detection mode with porosity at $S < 0.5 T_{ed}$, and wherein the detection period of the analytical signal T_d is synchronized with the modulation period of the active metal electrodeposition current[.] $T_{ed}(T_d=T_{ed})$, whereby the SERS structural lines within the measured spectrum at frequencies $v_e - \Delta v_i$, that correspond to values of oscillatory frequencies within the SERS spectrum of the impurity being analyzed is the identification signal of the impurity.

3. (Previously Presented) The method according to claim 2 wherein the amount of analyte is defined as:

$$C = \frac{I_{\max} - I_p}{I_p}$$

wherein C is the concentration of the analyte; I_{\max} is the intensity of the SERS signal measured at the peak point of the structural vibration band; and I_p is the intensity of the SERS signal measured at the pedestal area of the structural vibration band.[.] k is the proportionality coefficient which is determined by the cross-section value of SERS excitation signal of the impurity being analyzed.

4. (Previously Presented) The method according to claim 1 wherein the registration of the SERS spectrum is conducted at a scanning frequency modulation with a modulation period of $T_M \ll T_{ed}$ and a modulation amplitude of $\Delta v < \Delta$, wherein Δ is the average width of lines of the measured SERS spectrum, and the signature of the analyte is the first derivative of the SERS spectrum.

5. (Previously Presented) The method according to claim 1 wherein the registration of the SERS spectrum is conducted by optical correlation spectroscopy, and the signature of the analyte is the correlation score of the emission analyzed with the hardware transmission function of a receiver imitating a reference SERS signature of the analyte or with a model digital image of a references SERS spectrum of the analyte.

6. (Currently Amended) The method according to claim 1 wherein the SERS intensity is measured at at least one polarizer mix position of an interference polarizing filter is used in order to identify the analyte, wherein the transmission spectrum of the interference polarizing filter has been is correlated with the distribution of intensity of at least one characteristic band of the SERS spectrum of the analyte.

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7. (New) The method according to claim 1 wherein the metal is silver.